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DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

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INTERNATIONAL APPLICATION NO.

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INTERNATIONAL FILING DATE

21 June 2000

PRIORITY DATE CLAIMED

21 June 1999

TITLE OF INVENTION

CONTROL DEVICE FOR CONTROLLING VENDING MACHINES

APPLICANT(S) FOR DO/EO/US


HERRMANN et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(I).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment
☐ A SECOND of SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information: International Publication Page, Abstract, Marked-up Copy, Form 1449, 3 references, Form PCT/ISA/210, 3 sheets of drawing pages; a check in the amount of \$40.00 for Assignment recording fee

APPLICATION NO. (If known, see 37 CFR 1.5)		INTERNATIONAL APPLICATION NO.		ATTORNEY'S SOCKET NUMBER
urknown		10/019074 PCT/EP00/05749		13027.28USWO
17. [X] The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492(a) (1)-(5)): Search Report has been prepared by the EPO or JPO.....\$890.00 International preliminary examination fee paid to USPTO (37 CFR 1.492(a)(1)).....\$710.00 No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)).....\$740.00 Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(3)) paid to USPTO\$1040.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4).....\$100.00				CALCULATIONS PTO USE ONLY
ENTER APPROPRIATE BASIC FEE AMOUNT = \$890.00				
Surcharge of \$130.00 for furnishing the oath or declaration later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	16	-20 = 0	X \$18.00	\$0.00
Independent claims	1	-3 = 0	X \$84.00	\$0.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$260.00	\$
TOTAL OF ABOVE CALCULATIONS =				\$890.00
Reduction by 1/2 for filing by small entity, if applicable Small entity status is claimed pursuant to 37 CFR 1.27				\$445.00
SUBTOTAL =				\$445.00
Processing fee of \$130.00 for furnishing the English translation later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				+
TOTAL NATIONAL FEE =				\$445.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				+
TOTAL FEES ENCLOSED =				\$445.00
				Amount to be:
				refunded \$
				charged \$
1. [X] Check(s) in the amount of \$445.00 to cover the above fees is enclosed. 2. [] Please charge my Deposit Account No _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. 3. [X] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No 13-2725				
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.37(a) or (b)) must be filed and granted to restore the application to pending status.				
END ALL CORRESPONDENCE TO John J. Gresens MERCHANT & GOULD P.O. Box 2903 Minneapolis, MN 55402-0903				
SIGNATURE  NAME John J. Gresens REGISTRATION NUMBER 33,112				

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20 DEC 2001

S/N unknown

PATENTIN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: HERRMANN et al. Serial No.: unknown
Filed: 20 December 2001 Docket No.: 13027.28USWO
Title: CONTROL DEVICE FOR CONTROLLING VENDING MACHINES

CERTIFICATE UNDER 37 CFR 1.10

'Express Mail' mailing label number: EV037638388US

Date of Deposit: 20 December 2001

I hereby certify that this correspondence is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

By: 

Name: Chris Stordahl

PRELIMINARY AMENDMENT

Box PCT

Assistant Commissioner for Patents
Washington, D. C. 20231

Dear Sir:

In connection with the above-identified application filed herewith, please enter the following preliminary amendment.

IN THE ABSTRACT

Insert the attached Abstract page into the application as the last page thereof.

IN THE SPECIFICATION

Please replace page 1, line 3, with the following:

--Field of the Invention--

Please insert on page 1, line 13, the following:

--Description of the Prior Art--

Please insert on page 2, line 33, the following:

--Summary of the Invention--

Please insert on page 8, line 29, the following:

--Brief Description of the Drawings--

Please insert on page 9, line 8, the following:

--Description of the Preferred Embodiments--

IN THE CLAIMS

Please amend claims 1-16 as follows:

1. (Amended) A control device for controlling at least one automatic machine comprising
 - (a) identification means whereby a person who is authorized to use or to program the automatic machine can be identified, the identification means comprising a vocal control system which identified an individual authorized person on the basis of previously stored speech patterns and/or voice patterns;
 - (b) a security device that is controlled by the identification means in such a way as to permit or to block access to the vocal control system, depending on whether identification has been succeeded and;
 - (c) speech-pattern-analyzing means that recognizes specific speech-pattern inputs by reference to a speech-pattern library and that associates recognized speech-pattern inputs with particular parameters to be controlled, channels them and converts them to control signals such that a specified hardware/software receiving section of the automatic machine concerned received the control signal from the vocal input.
2. (Amended) Control device according to Claim 1, wherein the identification means is designed to analyze the speech signals that are input with respect to a key word.
3. (Amended) Control device according to claim 1, wherein the identification means is designed to analyze the individual speech signals with respect to both a key word and a voice pattern.

4. (Amended) Control device according to claim 1 wherein an identification data bank is provided, which stores several voice patterns and/or key words so as to identify several authorized persons.
5. (Amended) Control device according to claim 1, wherein the security device can be activated and inactivated.
6. (Amended) Control device according to claim 1 comprising an indicator that signals both a correctly identified vocal input and also an erroneous, unidentified vocal input,
7. (Amended) Control device according to claim 1, in combination with several automatic machines of the same kind or different kinds, which are connected to one another by a network and can each be identified and controlled by its own identification number.
8. (Amended) Control device according to Claim 7, wherein every automatic machine is assigned its own key word, so that even such machine can be identified and selected for a control process by means of a specific key word.
9. (Amended) Control device according to claim 1 comprising a data-collection system which collects the vocal data that have been input and evaluated and which is connected to a cashier system so that the identified and evaluated vocal data can be employed to generate a printed bill.
10. (Amended) Control device according to claim 1, wherein the identification apparatus is designed so that it can classify vocal inputs of different authorized persons according to priorities.
11. (Amended) Control device according to claim 10, wherein the classification is carried out with reference to a voice analysis and/or with reference to various key words.

12. (Amended) Control device according to claim 1, wherein at least the identification apparatus and the speech recognition device are implemented as a software program that can run on a personal computer.

13. (Amended) Control device according to Claim 1, comprising a switch that can occupy at least two positions, such that placing the switch in a first position enables a speech pattern to be recorded, and in a second position of the switch a speech pattern can be identified.

14. (Amended) Control device according to Claim 13, wherein the switch is implemented by software and can be controlled by the speech-pattern recognition device in such a way that after a user or an authorized person has been successfully identified, the switch is automatically turned to "RECORD".

15. (Amended) Control device according to Claim 13, comprising a clearing device, in particular in the form of a key switch or infrared switch, which can turn the switch to "RECORD".

16. (Amended) Control device according to claim 1, in combination with a wireless microphone or a wireless ordering system that is in radio communication with the control device.

REMARKS

The above preliminary amendment is made to remove multiple dependencies from claims 3-7, 9-10, 12, and 16. It is made to replace the phrase "characterized in that" with "wherein" in claims 2-5, 8, 10-12, and 14; with "comprising" in claims 1, 6, 9, 13, and 15; and with "in combination with" in claims 7 and 16. It is also made to remove reference numbers. Lastly, it is made to amend phrasing in claims 1 and 9.

A new abstract page is supplied to conform to that appearing on the publication page of the WIPO application, but the new Abstract is typed on a separate page as required by U.S. practice.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Marked-up Copy".

Applicants respectfully request that the preliminary amendment described herein be entered into the record prior to calculation of the filing fee and prior to examination and consideration of the above-identified application.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record, John J. Gresens (Reg. No. 33,112), at (612) 371.5265.

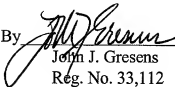
Respectfully submitted,

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Dated: 20 December 2001

JJG:hjh

By


John J. Gresens
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ABSTRACT

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A control device is disclosed for controlling automatic machines, in particular machines provided for dispensing food and drinks as well as machines for adjusting parameters during the preparation of food and drinks.

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The crucial aspect of this control device is that, on one hand, it provides a high degree of security against unauthorized use and actuation of the automatic machine, which is achieved by two means: by voice analysis as well as by key-word analysis.

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On the other hand, the control device makes it possible for the vocal commands that are entered into the device to be correctly assigned to the various parameters of the automatic machines that are to be controlled, and it also makes available control signals by means of which particular automatic machines can be selectively controlled, entirely by a vocal input.

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Fig. 1

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MARKED-UP COPY

In the specification

Line 3 on Page 1 has been amended as follows:

[Description] Field of the Invention

In the Claims

Claims 1-16 have been amended as follows:

1. A control device for controlling [automatic machines, in particular machines for dispensing food and drinks as well as machines for adjusting parameters during the preparation of food and drinks, with a means of means of identifying a person who is authorized to use and/or program the automatic machine, characterized in that] at least one automatic machine comprising

(a) [the] identification means [consist of a vocal-input and speech-recognition device (3, 4, 5, 6),] whereby a person who is authorized to use or to program the automatic machine can be identified, the identification means comprising a vocal control system which identifies an individual authorized person on the basis of previously stored speech patterns and/or voice patterns;

(b) a security device [(6, 7, 11) is provided] that is controlled by the identification means in such a way as to permit or to block access to the vocal control system, depending on whether identification has been succeeded and;

(c) speech-pattern-analyzing [device (8, 9, 10, 11, 12) is provided] means that recognizes specific speech-pattern inputs by reference to a speech-pattern library inputs by reference to a speech-pattern library and that associated recognized speech-pattern inputs with particular parameters to be controlled, channels them and converts them to control signals such that a specified hardware/software receiving section of the automatic machine concerned received the control signal from the vocal input.

2. Control device according to Claim 1, [characterized in that] wherein the identification means is designed to analyze the speech signals that are input with respect to a key word.

3. Control device according to claim 1 [or 2], [characterized in that] wherein the identification means is designed to analyze the individual speech signals with respect to both a key word and a voice pattern.

4. Control device according to [one of the claims 1 to 3,] claim 1, [characterized in that] wherein an identification data bank [(6)] is provided, which stores several voice patterns and/or key words so as to identify several authorized persons.

5. Control device according to [one of claims 1 to 4,] claim 1, [characterized in that] wherein the security device [(6, 7, 11)] can be activated and inactivated [(at 5)].

6. Control device according to [one of the preceding claims,] claim 1, [characterized by] comprising an indicator that signals both a correctly identified vocal input and also an erroneous, unidentified vocal input.

7. Control device according to [one of the preceding claims,] claim 1, [characterized by] in combination with several automatic machines [(14a, 14b, 14c; 20, 21),] of the same kind or different kinds, which are connected to one another by a network and can each be identified and controlled by its own identification number [(ID)].

8. Control device according to Claim 7, [characterized in that] wherein every automatic machine [(14a, 14b, 14c; 20, 21),] is assigned its own key word, so that even such machine can be identified and selected for a control process by means of a specific key word.

9. Control device according to [one of the preceding claims,] claim 1, [characterized by] comprising a data-collection system [(17a, 17b)], which collects the vocal data that have been input and evaluated and which is connected to a cashier system [(18)] so that the identified and evaluated vocal data can be employed to generate a printed bill[, in particular one that contains details of the transaction].

10. Control device according to [one of the claims 1 to 6] claim 1, [characterized in that] wherein the identification apparatus is designed so that it can classify vocal inputs of different authorized persons according to priorities.

11. Control device according to claim 10, [characterized in that] wherein the classification is carried out with reference to a voice analysis and/or with reference to various key words.

12. Control device according to [one of the preceding claims] claim 1, [characterized in that] wherein at least the identification apparatus and the speech recognition device are implemented as a software program that can run on a personal computer.

13. Control device according to Claim 1, [characterized by] comprising a switch [(5)] that can occupy at least two positions, such that placing the switch in a first position enables a speech pattern to be recorded, and in a second position of the switch a speech pattern can be identified.

14. Control device according to Claim 13, [characterized in that] wherein the switch is implemented by software and can be controlled by the speech-pattern recognition device in such a way that after a user or an authorized person has been successfully identified, the switch is automatically turned to "RECORD".

15. Control device according to Claim 13, [characterized by] comprising a clearing device, in particular in the form of a key switch or infrared switch, which can turn the switch to "RECORD".

16. Control device according to [one of the preceding claims,] claim 1, [characterized by] in combination with a wireless microphone or a wireless ordering system that is in radio communication with the control device.

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Control device for controlling automatic machines

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DESCRIPTION

The invention relates to a control device for controlling automatic machines, in particular machines provided for dispensing food and drinks as well as machines for adjusting parameters during the preparation of food and drinks, with a means of identifying a person who is authorized to use and/or to program the machine.

In order to obtain products from a machine for dispensing drinks, a user (e.g., attendant, waiter etc.) mainly employs the request mechanism provided with the machine; these are commonly found in great variety of form and function. For operating such a machine, at present the user has available primarily manual reference and identification means. These include, for example, waiters' locks, chip-card systems, fingerprint recognition, iris recognition and product keyboard or touch-screen buttons.

A disadvantage of the methods employed today is that because of the diversity and the nature of the operating mechanisms that are provided, the user's ability to handle them is severely impaired. This results in particular from the fact that an identification system such as a waiter's lock, chip card, keyboard etc. must be operated by hand, so that the preparation process that ultimately delivers the desired product (e.g., glass, cup, saucer etc.) is very time-consuming. Furthermore,

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- 2 -

handicapped people find it difficult or entirely impossible to actuate any of these operating mechanisms.

5 The German patent DE 196 36 452 A1 discloses a multiple-user system for vocal input, the central point of which is that with a speaker-dependent voice recognition system a separate speech-pattern vocabulary comprising the users' identification words is available for all the users in common, and for each individual user another, special speech-pattern vocabulary comprising the application-specific words is available.

10 The application-specific speech-pattern vocabulary is associated with the individual user by recognition of a user-specific password spoken by the user.

15 This known multi-user system based on a vocal input, however, provides no especially high degree of security, because merely the knowledge of an application-specific word enables an unauthorized person to use such a system at any time.

20 Furthermore, this known multi-user system also provides no opportunity for application-specific words to be targeted towards, for instance, particular software sections or hardware sections of a machine of this kind.

25 The patent DE 197 05 471 A1 discloses a method and a circuit arrangement for voice recognition and vocal control of apparatus. In this known method and circuitry, the command words are recognized in principle by representing command-word signals digitally and calculating features of the digital signals that are stored in a neuronal network for detecting the associated command word.

30 It is the objective of the present invention to create a control device for controlling automatic machines, in particular machines for dispensing food and drinks and machines for adjusting parameters during the preparation of food and

- 3 -

drinks, with which extremely diverse functions of the machine concerned can be controlled in a targeted manner by a vocal input, such that simultaneously a high degree of security with respect to unauthorized use and operation of that particular machine is ensured.

This objective is achieved in accordance with the invention by the following:

- (a) the identification means consists of a vocal-input and speech-recognition device, which identifies an individual authorized person on the basis of previously stored speech patterns and/or voice patterns;
- (b) a security device is provided that can be controlled by the identification means in such a way as to permit or block access to the vocal control system, depending on whether identification has succeeded; and
- (c) a speech-pattern-analyzing device is provided that recognizes specific speech-pattern inputs by referring to a speech-pattern library and is so constructed that it associates recognized speech-pattern inputs with the particular parameters to be controlled, channels them and converts them to control signals such that the specified hardware/software section of the machine concerned receives the control signal obtained from the vocal input.

In a practical embodiment of the present invention the speech patterns can be recorded by turning a switch. This switch can exist in reality or be virtual, i.e. simulated by software. The position of the switch can thus be changed in two ways between "speech-pattern recording" and "speech-pattern recognition".

1. An authorized person initiates a recording sequence by speaking a key word into the machine, e.g. "RECORD". After the speech pattern has been analyzed - so that the user is

- 4 -

recognized as an authorized user - and after recognition of the spoken word as a command word, the virtual switch is turned to "RECORD".

2. A person (authorized) uses a clearing device (e.g., a key-operated switch, infrared) to switch the control device to "RECORD".

After a short pause, the control device indicates how to proceed, depending on configuration:

1.a. Configuration with authorization stage:

By rapid blinking of an LED, when appropriate, the control device indicates that the authorization stage can be approved for the new user who is being introduced. The presented word is tested for authorization and command. If a test is failed, the control device returns to its initial position or state.

If the presented word is recognized as "good", this level of authorization is entered into the field provided for the new user who is being introduced, i.e. the ID database.

1.b. After a pause has elapsed, the control device signals, e.g. by a low (in comparison to 1.a) blink frequency of the LED, that it is ready to record. The user being newly introduced then speaks an identification word. The detected speech pattern is first sought in the ID database.

If the configuration of the control device is set, e.g., to "admit user more than once", the speech pattern is stored in the ID database.

- 5 -

But if the configuration of the control device is set to "do not admit user more than once", the speech pattern is not stored in the ID database.

5 The sequence is thus completed. The speech-recognition device thereupon returns to its initial state.

The invention can be advantageously embodied by designing the identification means so that it can analyze the vocal signals that are input with respect to a key word.

10 The control device according to the present invention thus offers double security, because controlling of the machine concerned is not allowed in response to a spoken input unless two criteria are met: a particular key word must be identified, and the voice of the particular person must be recognized and this person thereby identified as one who is authorized.

15 In other words, the identification means is designed to analyze the input vocal signal with respect to both a key word and a voice pattern.

20 To make it possible for several authorized persons to speak to an individual machine, in accordance with the invention an identification database is provided that stores several voice patterns and/or key words, so as to identify several authorized persons.

The security device described above can furthermore, depending on the particular application, be activated and inactivated.

25 For example, when the control device according to the present invention is being used in an area or a room to which only authorized persons have access, the security device can be inactivated so that all authorized persons have access to the machine to be controlled. (Also, for instance, when a vending
30 machine is intended for self-service operation.)

The security of the speech recognition is additionally increased by providing in another embodiment of the invention an indicator to signal both that a vocal input has been recognized as correct and that an input is erroneous and has not been identified. Thus the user is informed and at the same time the possibility of unauthorized control of the machine is nearly ruled out.

An especially advantageous embodiment of the invention further comprises several automatic machines, of the same kind or of different kinds, that are connected to one another by a network; in this case each machine can be identified and controlled by way of its own identification number (ID number).

In this last embodiment each of the machines can be associated with its own specific key word, so that the machine concerned can be identified and selected for control by this particular word.

The control device according to the present invention is also equipped with a data-collection system that collects the words that have been input and evaluated and that is connected to a cashier system so that the identified and evaluated inputs can be used to produce invoice documentation, in particular including details of the transaction. A practical embodiment of the invention comprises a so-called "Guest Check Terminal", which has the following functions:

The Guest Check Terminal is spatially disposed at a dispensing machine or in its close proximity. In this case a manual input can be completely eliminated. For example, a waiter orders from a coffee dispenser by saying, "One coffee, Table 5, Chair 3". The information is sent from the control device to the cashier system. At the same time the dispensing machine supplies the requested product, with no need for a product button or the like to be actuated. Now if permission is granted by the cashier system (the waiter is authorized, the product is

- 7 -

available etc.), the machine delivers the order. In the same way, the guest's bill can be generated by a spoken input.

Following an input "Bill Table 5, Chair 3", the bill is printed out by the cashier system.

5 In another embodiment of the control device in accordance with the invention, it is further equipped with a wireless microphone or a so-called "orderman" (wireless ordering system). This enables a waiter to speak the guest's order directly. The orders or requests for bills are then identified
10 as described above, interpreted and passed on to the appropriate system.

A similar system can also be implemented, for instance, in the kitchen area, in that a cook or another person with authorized access to the equipment controls it verbally, by speaking into
15 the terminal (perhaps with a wireless microphone) something like:

"Hot-air steamer well-done temperature 180°C" or "Final browning for 5 minutes".

20 The various items of equipment are interlinked by wireless or other means and in principle no longer need any operating elements. Hence they can also not be directly influenced or actuated by unauthorized persons. It is also possible to call up automatic cooking programs, inasmuch as the person loading the equipment need only specify the kind and condition of the
25 raw material being inserted (e.g., "soup noodles, medium moist"). By way of the network, the corresponding cooking programs are called up or loaded and executed.

Broad applicability of the control device according to the present invention is further achieved by designing the
30 identification means such that it can classify vocal inputs from various authorized persons according to priorities.

When the automatic machinery to be controlled is designed, for example, to carry out the various functions that are required in a kitchen, the control device according to the present invention can assign the highest priority to a vocal input from the master chef, whereas input from an apprentice is given the lowest priority.

In this case the individual spoken commands can apply to the temperature setting to prepare a particular kind of food, the ventilation above a stove, an air conditioner and so on.

The classification can advantageously be done on the basis of a voice analysis and/or by various key words.

In the following the invention is explained with reference to exemplary embodiments, the explanation of which is assisted by the attached drawings, wherein

Fig. 1 is a schematic block diagram of a control device with characteristics according to the invention;

Fig. 2 shows the control device according to the invention in combination with several automatic delivery machines that are connected to one another by way of a network;

Fig. 3 shows a specific embodiment of the control device in accordance with the invention with a cashier system; and

Fig. 4 shows an embodiment that is especially advantageous in a kitchen environment.

Fig. 1 shows schematically, in the form of a block diagram, an embodiment of the control device according to the present invention, which as a whole is designated by the numeral 1. The control device shown here comprises an input microphone 3 for

- 9 -

the input of spoken words and a speech recognizer 4, which can be connected by way of a switch device 5 to a data bank 6 in which speech and/or voice patterns of authorized persons are and can be stored. When the speech recognizer 4 is connected to the data bank 6 by way of the switch device 5, it is also possible to store in the data bank additional speech patterns (key words) and/or voice patterns of additional authorized persons.

The speech recognizer 4, the data bank 6 and a comparator 7, which is connected to the output of the data bank and to the output of the speech recognizer 4, together constitute an identification means with which to identify an authorized person with reference to a code word input by way of the microphone 3 and/or to a voice pattern.

The output of the comparator 7 is connected to an interpreter 11, which depending on the result of the comparison in the comparator 7 can be, for example, either blocked or freed.

The comparator 7 in combination with the interpreter 11 forms a security device that can be controlled by the above-mentioned identification means so as to permit or block the vocal control, depending on the result of the identification process in each case.

The output of the speech recognizer 4 is connected to another comparator 9, which as its second input quantity receives data from a speech-pattern library 8, in order to determine whether a word that is fed in represents a particular command that is stored as a speech pattern (e.g., as a word) in the speech-pattern library 8.

When the input speech signal represents a command that makes sense, inasmuch as its basic verbal pattern is stored in the speech-pattern library 8, the comparator 9 sends a corresponding signal to the interpreter 11, which interprets

- 10 -

the identified command or speech pattern and channels it so that an appropriate control signal is directed to a particular hardware or software section of an affected automatic machine, by way of an interface 12. The control signal is then output by way of the output connector 13 and is sent to the specified hardware or software section of the specified machine.

It is evident that the interpreter 11 can be constructed in quite different ways and, for example, can contain devices for generating data blocks that comprise an address header, a data segment and a control segment in the customary, known form.

The individual data blocks can then be sent to the correct section of an automatic machine on the basis of an address header or address field, so that in this section, for example, particular parameters are adjusted to desired values.

Fig. 2 shows an embodiment of the control device in accordance with the invention that is designed to control several terminals by way of a network, with reference to a central speech-input station 15. In the block diagram shown in Fig. 2 the speech input station can be constructed according to the block diagram of Fig. 1. The control device 1 shown in Fig. 1 is connected, by way of a network not shown in detail here, to several automatic machines 14a, 14b and 14c, which may be the same or different and can contain sources of products.

By means of the control process explained above, each individual machine can be addressed selectively, so that products can be selectively dispensed by the machines 14a and/or 14b and/or 14c.

In the embodiment shown in Fig. 3, the control device is connected to a cashier system 18 and the control device contains data collection devices 17a, 17b (17a denotes a control device with speech recognition, as shown in Fig. 1, while 17b consists of a machine control system) that can be

designed or programmed for collecting and transmitting detailed data such as an inquiry, an ID, a kind or amount of product, etc. The cashier system 18 can be connected by way of another lead to one of the data collection devices 17b of the control device, such that in this device 17b, for example, price lists for a great range of products can be stored; in this case the associated memories are advantageously designed to be programmable.

In the arrangement shown in Fig. 4 the control device in accordance with the invention is used to control one or several automatic machines installed in a kitchen environment. By way of the control device, such as is illustrated in principle in Fig. 1, kitchen apparatus - for example, a stove 20, a hot-air steamer 21, a ventilator 22 or even a recipe manager 23 - can be selectively controlled.

The control device in accordance with the invention makes it possible to control a great variety of apparatus and devices without the use of any sort of buttons or chip cards and the like, merely by means of a vocal input. The result is that a high degree of security for the individual control steps is achieved when speech that is input is identified by two criteria, namely the occurrence of a quite specific key word together with the appearance of a specific voice pattern, which can be assigned to only one particular person.

For the person skilled in the art a number of alterations and modifications of the exemplary embodiments illustrated and described here are possible, without exceeding the scope of the present invention.

For instance, the possibility exists to equip a network not only with a single control device in the sense of the circuit arrangement according to Fig. 1, but instead to couple such a control device to a network at several nodal points (in several

- 12 -

different rooms), so that the control can be undertaken from several sites.

Furthermore it is also possible to design the identification means in the control device according to Fig. 1 in such a way that the spoken inputs of various authorized persons can be classified according to priority. This classification can advantageously be performed with reference to a voice analysis and/or to various key words that are assigned to different authorized persons and that advantageously can also be erased and/or reprogrammed.

It will also be evident to the expert that sections of the block diagram according to Figure 1, such as the identification means, the speech recognition and/or the security device, can be implemented by a software program that can run on a personal computer.

CLAIMS

5
1. Control device for controlling automatic machines, in particular machines for dispensing food and drinks as well as machines for adjusting parameters during the preparation of food and drinks, with a means of identifying a person
10 who is authorized to use and/or to program the automatic machine,
characterized in that

- 15 (a) the identification means consists of a vocal-input and speech-recognition device (3, 4, 5, 6), which identifies an individual authorized person on the basis of previously stored speech patterns and/or voice patterns,
- (b) a security device (6, 7, 11) is provided that can be controlled by the identification means in such a way as to permit or block access to the vocal control system, depending on whether identification has
20 succeeded, and
- (c) a speech-pattern-analyzing device (8, 9, 10, 11, 12) is provided that recognizes specific speech-pattern inputs by referring to a speech-pattern library and is so constructed that it associates recognized
25 speech-pattern inputs with the particular parameters to be controlled, channels them and converts them to control signals such that the specified hardware/software section of the machine concerned
30 receives the control signal obtained from the vocal input.

- 14 -

2. Control device according to Claim 1, characterized in that the identification means is designed to analyze the speech signals that are input with respect to a key word.
- 5 3. Control device according to Claim 1 or 2, characterized in that the identification means is designed to analyze the individual speech signals with respect to both a key word and a voice pattern.
- 0 4. Control device according to one of the claims 1 to 3, characterized in that an identification data bank (6) is provided, which stores several voice patterns and/or key words so as to identify several authorized persons.
- 5 5. Control device according to one of the claims 1 to 4, characterized in that the security device (6, 7, 11) can be activated and inactivated (at 5).
6. Control device according to one of the preceding claims, characterized by an indicator that signals both a correctly identified vocal input and also an erroneous, unidentified vocal input.
- 20 7. Control device according to one of the preceding claims, characterized by several automatic machines (14a, 14b, 14c; 20, 21), of the same kind or different kinds, which are connected to one another by a network and can each be identified and controlled by its own identification number (ID).
- 25 8. Control device according to Claim 7, characterized in that every automatic machine (14a, 14b, 14c; 20, 21) is assigned its own key word, so that each

- 15 -

such machine can be identified and selected for a control process by means of a specific key word.

9. Control device according to one of the preceding claims, characterized by a data-collection system (17a, 17b), which collects the vocal data that have been input and evaluated and which is connected to a cashier system (18) so that the identified and evaluated vocal data can be employed to generate a printed bill, in particular one that contains details of the transaction.

10. Control device according to one of the claims 1 to 6, characterized in that the identification apparatus is designed so that it can classify vocal inputs of different authorized persons according to priorities.

11. Control device according to Claim 10, characterized in that the classification is carried out with reference to a voice analysis and/or with reference to various key words.

12. Control device according to one of the preceding claims, characterized in that at least the identification apparatus and the speech recognition device are implemented as a software program that can run on a personal computer.

13. Control device according to Claim 1, characterized by a switch (5) that can occupy at least two positions, such that placing the switch in a first position enables a speech pattern to be recorded, and in a second position of the switch a speech pattern can be identified.

14. Control device according to Claim 13, characterized in that the switch is implemented by software and can be controlled by the speech-pattern recognition

- 16 -

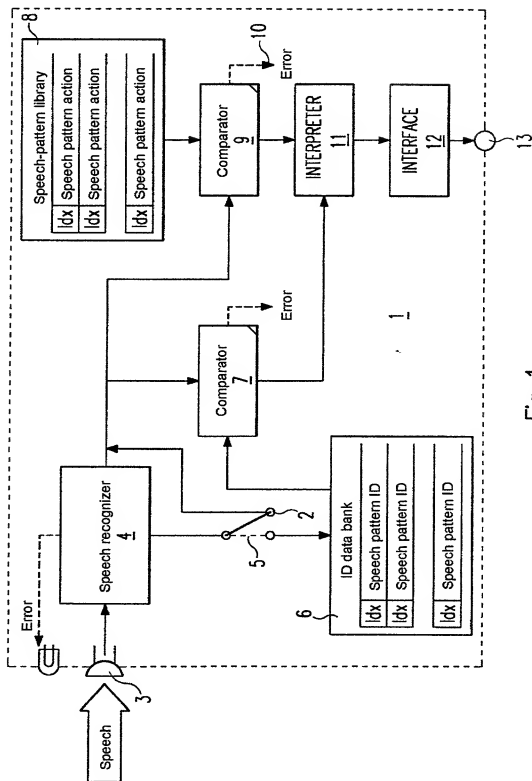
device in such a way that after a user or an authorized person has been successfully identified, the switch is automatically turned to "RECORD".

15. Control device according to Claim 13,

5 characterized by a clearing device, in particular in the form of a key switch or infrared switch, which can turn the switch to "RECORD".

16. Control device according to one of the preceding claims,
characterized by a wireless microphone or a wireless
10 ordering system that is in radio communication with the control device.

1/3



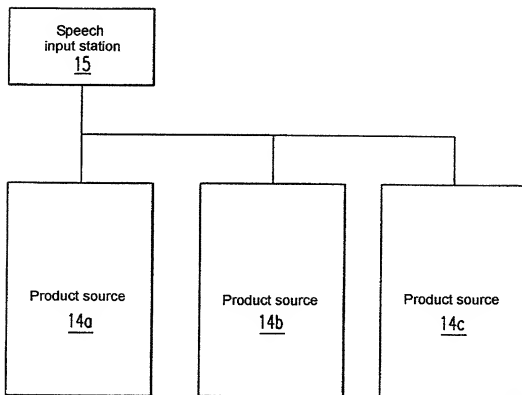


Fig. 2

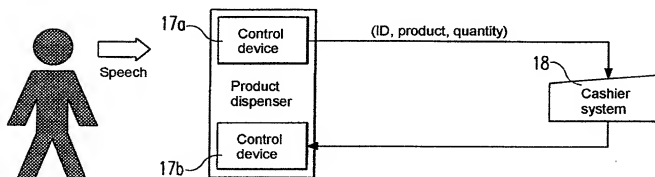


Fig. 3

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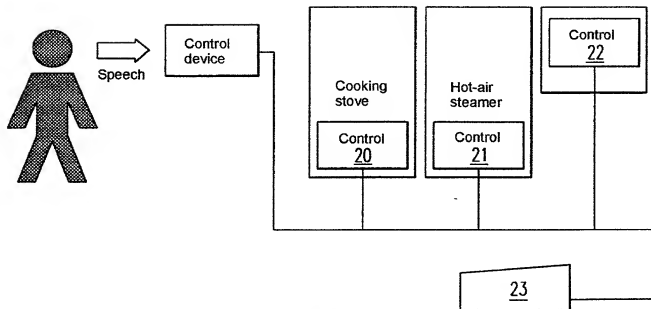


Fig. 4

MERCHANT & GOULD P.C.

United States Patent Application

CONVEYED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I truly believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **CONTROL DEVICE FOR CONTROLLING VENDING MACHINES**

The specification of which

a. ☐ is attached hereto

b. ☒ was filed on _____ as application serial no. _____ and was examined on _____ (if applicable) (in the case of a PCT-filed application) described and claimed in international no. PCT/EP00/05749 filed 21 June 2000 and as amended on _____ (if any), which I have reviewed and for which I claim a United States patent.

I hereby state that I have reviewed and understood the contents of the above-identified specification, including the claims, as set forth by any amendments referred to above.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(b)(5) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

a. ☐ no such applications have been filed.

b. ☒ such applications have been filed as follows:

FOREIGN APPLICATIONS, IF ANY, CLAIMED PRIORITY UNDER 35 USC § 119			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)
Germany	199 24 233.1	21 June 1999	
Germany	199 48 244.5	6 October 1999	
ALL FOREIGN APPLICATIONS, IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)

I hereby claim the benefit under Title 35, United States Code, § 120(b)(5) of any United States and PCT international application(s) filed before and, having as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 35, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the earliest or PCT international filing date of this application.

U.S. APPLICATION NUMBER	DATE OF FILING (day, month, year)	STATUS (pending, pending, abandoned)
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I hereby claim the benefit under Title 35, United States Code § 119(c) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (day, month, year)
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I acknowledge the duty to disclose information that is material to the patentability of the invention in accordance with the provisions of the German Patent Act, § 1(3) (reproduced below):

§ 1(3) Every disclosure of information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor towards the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information ceases with respect to each pending claim until the claim is accepted or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is accepted or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim listed in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1(7)(b), (d) and 1.36. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to voluntarily examine:

(1) prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim potentially defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim,

or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information supports a conclusion that a claim is unpatentable under the requirements of evidence, burden-of-proof standard, giving each claim in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the invention, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

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